In the claims:

Please amend the following claim:

1.(amended) A process for filling a via hole in a layer of FSG, having an upper surface, comprising the sequential steps of:

depositing the layer of FSG on a substrate;

depositing a layer of USG on only the entire upper surface;

A1

patterning and then etching only said USG and FSG layers, whereby a via hole, having walls and extending as far as the substrate, is formed;

depositing a seed layer on the walls of the via hole;

overfilling the via hole with a material; and

by means of CMP, removing said material until said USG layer is reached.

REMARKS

Examiner Coleman is thanked for his thorough search and Office Action. Reconsideration of the rejection of all claims is respectfully requested. We wish to

comment on his remarks as follows:

Examiner's ruling regarding restriction of claims is duly noted. Claims 13-22 are hereby canceled. A divisional application will be filed at the appropriate time.

Overview

Defects near the top surface of a hole etched in FSG (fluorinated silicate glass) are avoided by laying down a layer of USG (undoped silicate glass) over the surface of the FSG layer prior to patterning and etching.

Reconsideration is requested of all rejections based on 35 U.S.C. 112:

Examiner argues that the phrase "on the upper surface" is indefinite since it is not clear if the upper surface is the substrate or the FSG layer. We draw Examiner's attention to the phrase "a layer of FSG, having an upper surface," that appears in the preamble. No such qualifying phrase is attached to "a substrate" on the next line, so it is clear that 'upper surface' must refer to the FSG layer.

Reconsideration is requested of all rejections based on 35 U.S.C. 102:

For this rejection Examiner has relied on Tsai et al. Tsai's process, in so far as it may read on our claim 1, is best seen in his FIGs. 2B through 2G and is as follows:

(1) deposit silicon nitride layer 206

(2) deposit first USG layer 208

(3) deposit FSG layer 219

(4) deposit and then pattern etch stop layer 214

(5) deposit second USG layer 216

(6) deposit dielectric layer 218

(7) etch trench in second dielectric 218 and USG 216

Our process, as recited in amended claim 1, reads, in part, as follows:

(a) depositing the layer of FSG on a substrate;

(b) depositing a layer of USG on only the entire upper surface;

(c) patterning and then etching only said USG and FSG layers, whereby a via hole, having walls and extending as far as the substrate, is formed;

Examiner argues that Tsai's steps (3) through (7) read on our steps (a) through (c). Comparison of these reveals the following:

A. Step (3) corresponds to step (a), assuming that Tsai's first USG layer 208 may be

considered to be a substrate.

B. Step (4) has no counterpart in our invention.

C. Step (5) does not correspond to step (b) since the USG layer is not deposited onto the entire FSG surface (see FIG. 2E), being limited to the opening in etch stop layer 214 that was formed in step (4).

D. Step (5) does not correspond to step (b) since the USG layer is not deposited onto only the FSG surface, since it also coats etch stop layer 214.

E. Step (6) has no counterpart in our invention.

F. Step (7) does not correspond to step (c) since dielectric layer 218 is etched in addition to the FSG and USG layers.

Thus, on the basis of items C, D, and F above, it is clear that Tsai does not teach every element of our claim 1 and therefore does not anticipate claim 1 as it is required to do under section 2131 of the MPEP.

Reconsideration is requested of all rejections based on 35 U.S.C. 103

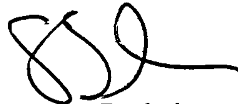
Claims 2-4 are rejected as being matters of routine. Since Claim 1 is, we believe, now allowable, these rejections become moot.

In conclusion, we again thank Examiner Coleman for his careful reading of our application.

Reconsideration and withdrawal of the rejection is respectfully requested.

Allowance of all Claims is requested. It is also requested that should Examiner Coleman not find that the Claims are now Allowable, he should please call the undersigned Attorney at (845)-452-5863 to overcome any problems preventing Allowance.

Respectfully submitted



Stephen B. Ackerman #37761

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Please amend the following claim:

1. A process for filling a via hole in a layer of FSG, having an upper surface, comprising the sequential steps of:

depositing the layer of FSG on a substrate;

depositing a layer of USG on only the entire upper surface;

patterning and then etching only said USG and FSG layers, whereby a via hole, having walls and extending as far as the substrate, is formed;

depositing a seed layer on the walls of the via hole;

overfilling the via hole with a material; and

by means of CMP, removing said material until said USG layer is reached.